



MISSOURI DEPARTMENT OF  
**HEALTH**

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Director

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**SPFD BRANCH**

April 15, 1994

West Lake  
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Diana Newman  
Environmental Engineer  
Waste Management Division  
U. S. Environmental Protection Agency  
726 Minnesota Avenue  
Kansas City, Kansas 66101

Dear Ms. Newman:


Missouri Department of Health (DOH) has reviewed the revised final RI/FS work plan for the West Lake Landfill Site located in Bridgeton, St. Louis County, Missouri. While the work plan appears adequate for conducting an investigation, DOH does have some concerns. DOH has generated some specific comments for your consideration and they are included as an attachment to this letter.

Thank you for the opportunity to review this document. If you have any questions or if you need additional information, please feel free to call me at (314) 751-6111.

Sincerely,

*Charles Clay Arnold*

Charles Clay Arnold  
Environmental Specialist II  
Bureau of Environmental Epidemiology

  
40056856  
SUPERFUND RECORDS



**Comments on the Revised RI/FS Work Plan, Sampling and Analysis Plan,  
Quality Assurance Project Plan and Site Safety and Health Plan  
West Lake Landfill Site  
Bridgeton, Missouri  
Revised February 28, 1994**

1. Section 3.3.2.2, page 3-40, second paragraph. This paragraph states that surface water runoff is not expected to mobilize contaminants beneath Areas 1 and 2. However, it goes on to state that a severe, prolonged rainfall may lead to erosion of soil cover in the lower elevations of Area 1. Because of the steep sloping on the west side of Area 2, soil cover erosion could occur, thereby mobilizing contaminants beneath Area 2. See comment #2.
2. Section 3.8.1.2, page 3-46, fourth paragraph. This paragraph states that elevated radionuclide concentrations were detected in an area south and west of the northwest berm (outside the West Lake Property) surrounding Area 2. It goes on to state that these elevated (above background) concentrations seem to be caused by surface water erosion of the berm.
3. Section 3.8.1.2, page 3-47, third paragraph. This paragraph states that 61 surface soil samples taken by RMC were analyzed for U-238, Ra-226, Ra-223, Pb-211 and Pb-212. In all samples, only uranium and/or thorium decay chain radionuclides and K-40 were detected. The samples were held for 10-14 days prior to analyses. Because Pb-211 has such a short half-life (36.1 minutes), less than 0.1% would remain after 10 half-lives (Pb-211, 6 hours, 1 minute). Because it is not a decay chain product of either the uranium or thorium series, one would not expect to detect it.
4. Section 3.8.2.2, page 3-54, fourth paragraph. Dames and Moore sampled monitoring wells 101 through 107 for radiological constituents during their Phase II investigation. This paragraph states that unfiltered samples collected by Dames and Moore met the criteria for gross alpha (15 pCi/L), except for monitoring wells 103, 105, 106, and 107. Monitoring well 104 should be included with these as it tested at 21 pCi/L (see Table 3-4). It also states that all unfiltered samples met the criteria for gross beta. This is incorrect. Table 3-4 indicates that monitoring wells 104, 106 and 107 exceeded the gross beta criteria of 50 pCi/L, testing at 69, 59 and 58 pCi/L, respectively.
5. Section 4.4.3, page 4-10, second paragraph. This paragraph states that terrestrial species' contact with contaminated soil would be limited to areas of slope failure or isolated areas of loss of soil cover integrity. This is not necessarily true. A burrowing species may contact contaminated soil present beneath the surface.
6. Section 4.5, page 4-12, Table 4-3. Please provide a rationale for omitting air as an environmental medium of concern for the general public. In addition, please provide a rationale for omitting soils/sediments as an environmental medium of concern for ecological receptors.
7. Section 5.2.1.4, page 5-5, fourth paragraph. This paragraph states that two potential air contaminant concerns have been identified at the site - radon gas and landfill gas. There is a third potential concern - entrainment of contaminants in fugitive dust.



8. Section 5.3.2, page 5-15, Table 5-4 (p. 1 of 2). The units as shown are incorrect. Units for soil should be mg/kg and the units for water should be ug/L. The units for radionuclides shown on page 5-16 (p. 2 of 2) are correct.
9. Section 5.3.2, page 5-15 and 5-16, Table 5-4. Reporting limits for several contaminants in tap water and soil are above the calculated PRG. Text on page 5-14 indicates reporting limits were developed considering background levels likely to be encountered and the conservatism of the PRGs. However, background levels are provided in only a few cases for contaminants of concern whose reporting limits exceed the PRG. Please provide a rationale for reporting limits exceeding PRGs.
10. Section 6.0, page 6-1, second paragraph. This paragraph states that the planned investigation is designed to be completed in one field mobilization. It goes on to state that if radionuclides are present in off-site soil and groundwater at levels exceeding "established" backgrounds, a second phase will be prepared and submitted to EPA. However, background values have been reported for only two of five radionuclides in soil and only one in water. Please provide background levels for the remaining radionuclides of concern.
11. Section 6.0, page 6-4, Table 6-1 (p. 3 of 3). Air sampling for contaminants (including radionuclides) in fugitive dust should be added under the Action column for Air/Landfill Gas.
12. Section 6.2, page 6-8, third paragraph. This paragraph states implies ion chamber instruments must be left in place 20 to 60 minutes before stable readings can be obtained. This is incorrect. Portable, hand-held ion chambers typically can provide indication of radiation levels in 20 to 40 seconds.
13. Section 6.2, page 6-8, fourth paragraph. This paragraph states that cross-calibration of the NaI detector with a pressurized ionization will permit the translation of NaI detector results (counts per minute) to gamma exposures (micro-R per hour). Pressurized ion chambers can operate at higher voltages and therefore are inherently more stable, but typically cannot detect radiation in the micro-R range. Please explain how this is to be accomplished.
14. Section 6.2, page 6-8, fourth paragraph. This paragraph states that cross-calibration measurements will be made at up to three known "hot spots". Based upon the size of Areas 1 and 2, this may not be adequate to determine a reliable conversion factor. The variability in isotopic distribution and depth of the contamination could result in a conversion factor that would cause an over- or underestimation the true gamma radiation levels. In addition, instrumentation is typically calibrated at low, middle and high ends of their scale. Calibrating only at the high end may make the instrumentation underrespond.
15. Section 6.2 page 6-8, fourth paragraph. This paragraph states that multiple point field calibrations are desirable since the NaI detector is much more energy dependent than the ion chamber. The output of a NaI detector when used with a count rate meter has nothing to do with the energy of the incident radiation, i.e. is energy independent. To put it more simply, a count is a count. Over a wide range of energies, the ion chamber will indicate the true gamma exposure in air.

16. Section 6.3.4, page 6-17, first paragraph. This paragraph states that the detector is calibrated semi-annually with a Cs-137 source to verify the relationship between cpm and exposure rate of about 30 cpm/ $\mu$ R/hour. It should be noted that this relationship only holds true for Cs-137.
17. Section 6.3.4, page 6-17, second paragraph. This paragraph states that the only radionuclide that cannot be quantified by gamma spectroscopy is Th-230, which is not a gamma emitter. Quantification of Th-230 levels could be performed using alpha spectroscopy.
18. Section 6.4, page 6-20, fifth paragraph. This paragraph states that some monitoring well locations may change based on the overland gamma survey. Please explain.
19. Section 7.2.3, page 7-28, Table 7-3A (page 1 of 5). This table shows cobalt as having an MCL of 5  $\mu$ g/L. What is the source of this MCL?
20. Section 7.2.4, page 7-39, first paragraph. This paragraph states that non-promulgated criteria, advisories or guidance issued by Federal or State agencies may be considered as To Be Considered (TBCs) in determining clean up levels for the protection of public health or the environment. The State of Missouri has proposed Any-Use Soil Levels (ASLs) documenting maximum soil concentrations which are acceptable to human health in a residential setting. While the proposal was withdrawn in November of 1992, the state plans on re-proposing these ASLs in the near future; therefore Missouri's ASLs should be retained as TBCs.

#### Sampling and Analysis Plan

21. Section 3.2.2, page 3-4, first and second paragraphs. See comments #12, #13, #14 and #15 above.
22. Section 3.3.8, page 3-13, second paragraph. See comment #17.

#### Quality Assurance Project Plan

23. Section 3.4, page 3-3, second paragraph. This paragraph states that surface water sampling will be performed at the North Water Body, adjacent to Area 2. Section 6.8, page 6-34, third paragraph of the work plan states that surface water sampling will be performed at other low-lying water drainage retention ponds as well. Please clarify this discrepancy.

#### Site Safety and Health Plan

24. Section 3.4, page 3-6, Table 3-3 (p. 1 of 5). It should be noted that the Permissible Exposure Limit (PEL) of 1.25 rem/quarter for radioactive material only applies to individuals who have received radiological training to minimize their exposure and includes both external and internal exposures.